

# SKA I Generic Surveys



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# SKA I High Priority Science

- Cosmic Dawn/EoR: imaging &  $P(k)$
- Pulsars: galactic population, test gravity & gravitational waves
- HI: galaxy formation, ISM studies
- Transients: missing baryon problem
- Cradle of Life: planet formation at  $< 100$  pc
- Magnetism: interstellar and intergalactic B
- Cosmology: gravity, initial conditions (non-Gaussianity) & matter dipole

Generic surveys should amount to  $< 17,000$  hrs per site,  
a generic survey addresses at least 2 key science objectives

SKA Low:  
50-350 MHz

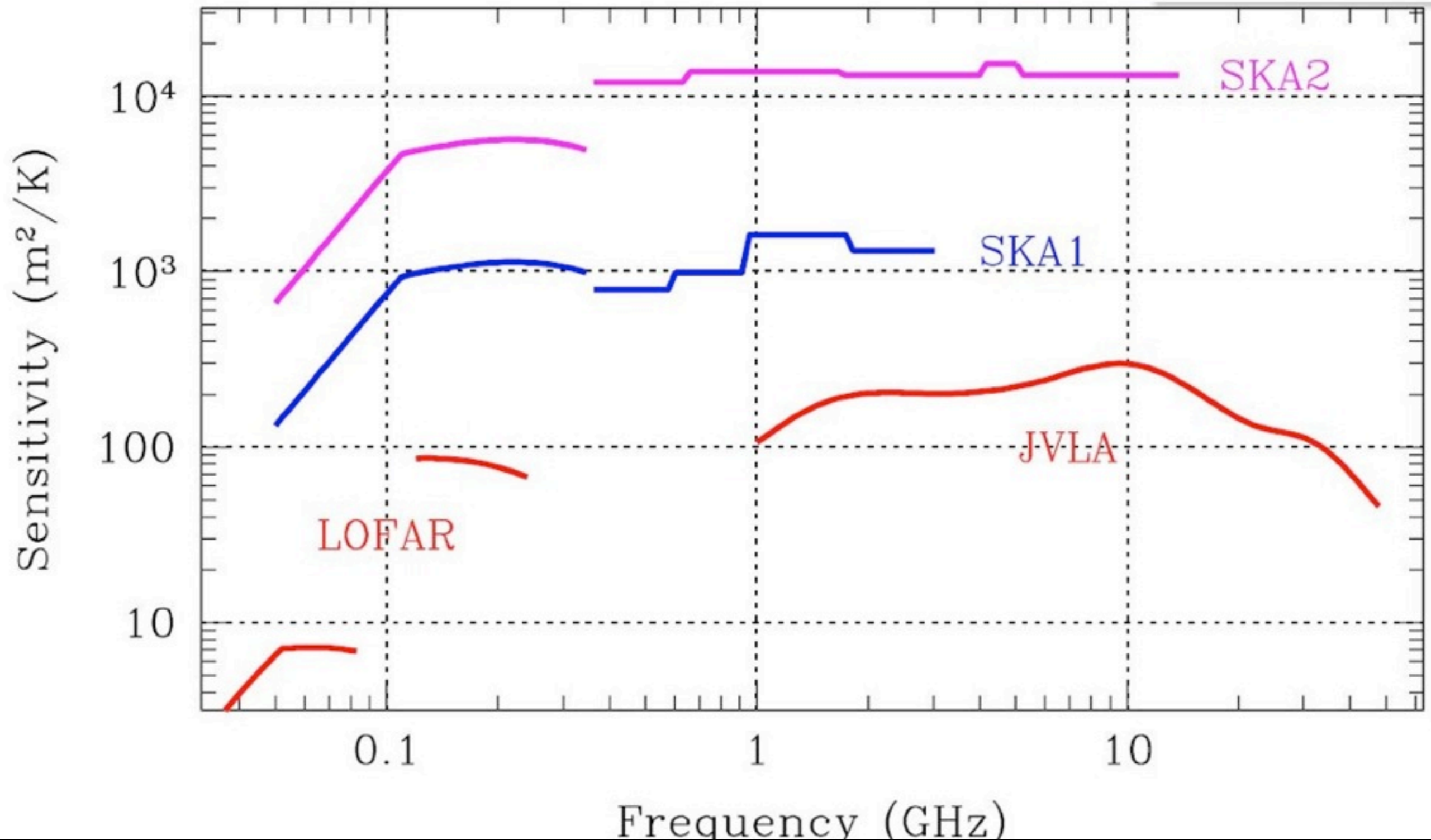


SKA Mid:  
0.35-14 GHz



→ Current state of discussion: 5 generic surveys

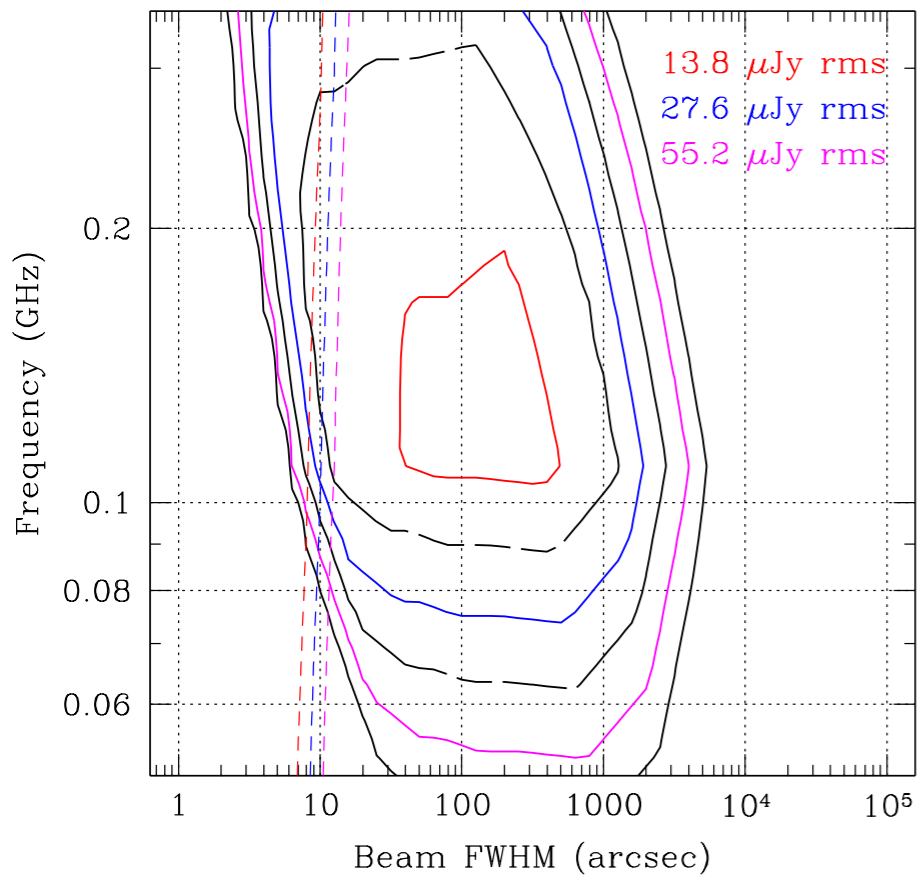
# Sensitivity comparison



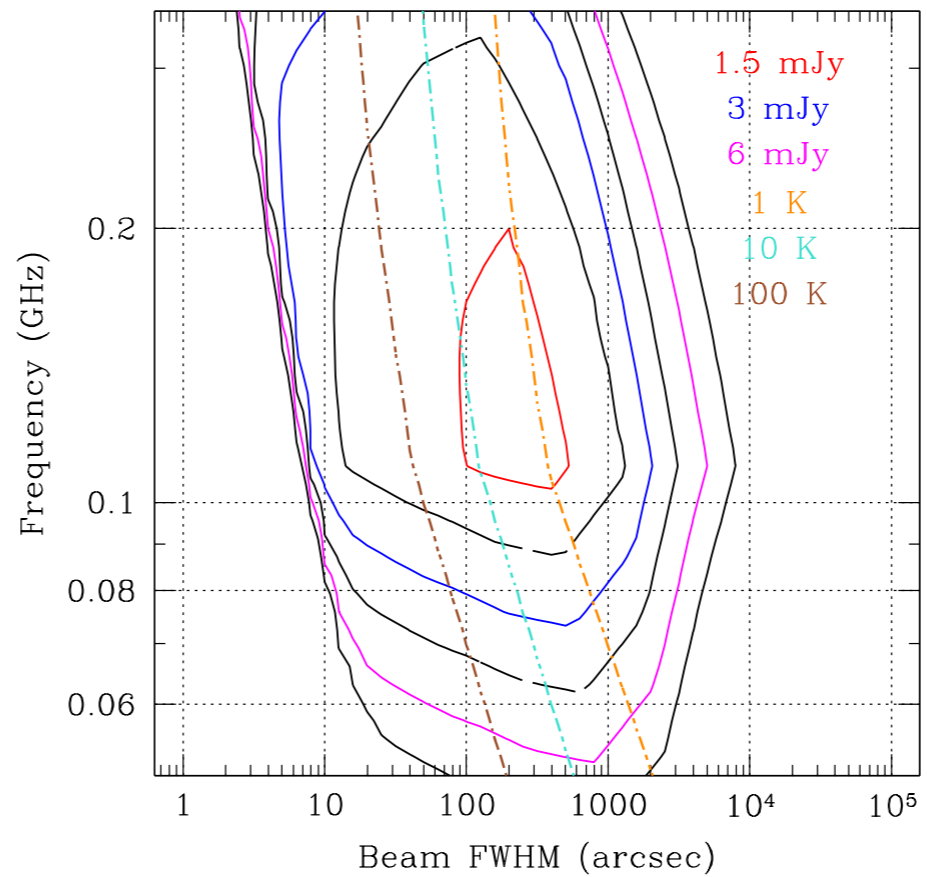
Survey	Freq. [MHz]	Area [deg <sup>2</sup> ]	Time [h]
Mid-A	950-1,760	31,000	8,000
Mid-A1	350-1,050	15,000	8,000
Mid-A2	950-1,760	20,000	8,000
Mid-B	950-1,760	500	4,000
Mid-B1	950-1,760	1,000	4,000
Mid-C	950-1,760	20	2,000
Mid-C1	950-1,760	40	2,000
Mid-D	4600-13,800	480/Gal	2,000
Low-A	50-350	31,000	10,000

Survey	S [ $\mu$ Jy]	$\Theta$ [as]	lg(Nc)	lg(Ng)	$\langle z \rangle$
Mid-A	5	0.8	8.3	6.3	0.07
Mid-A1	5	1.0	8.1	-	-
Mid-A2	4	0.8	8.1	6.3	0.07
Mid-B	0.9	0.8	7.0	5.6	0.18
Mid-B1	1.3	0.8	7.2	5.7	0.15
Mid-C	0.24	0.8	5.9	4.9	0.3
Mid-C1	0.34	0.8	6.2	5.1	0.25
Mid-D	6	0.2	6.0	-	-
Low-A	20	7			

SKA1-Low Continuum Survey (30%,  $3\pi$ sr, 10kh)

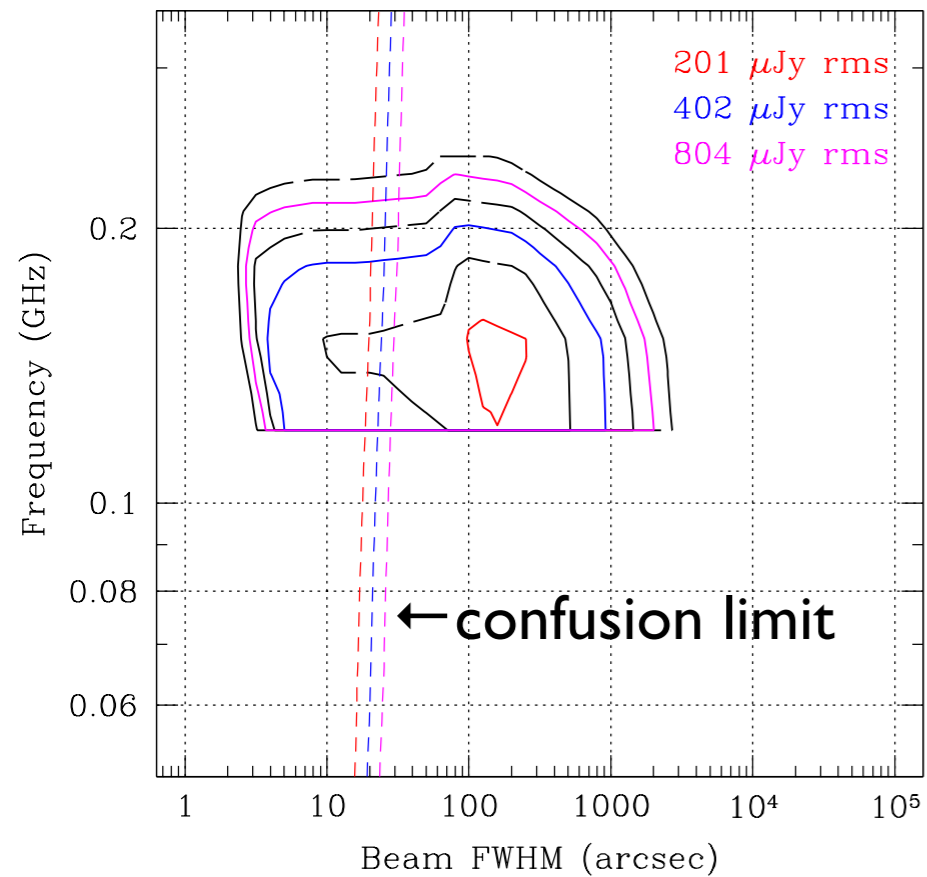


SKA1-Low Line Survey (10 km/s,  $3\pi$ sr, 10kh)

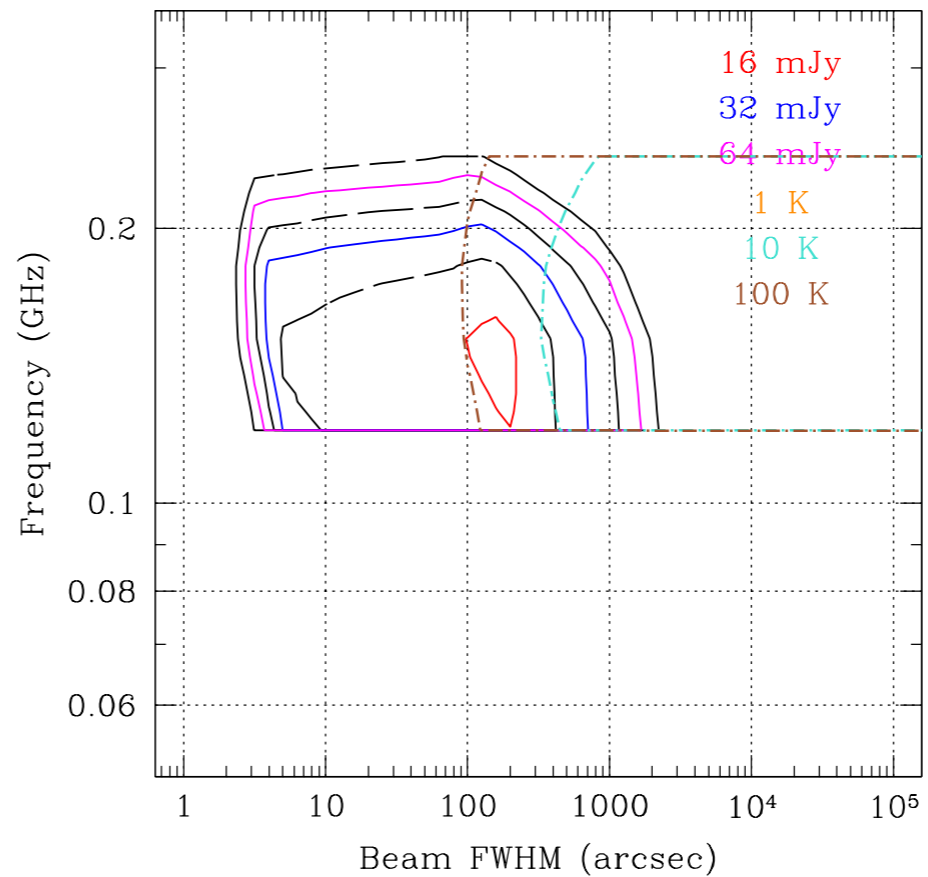


**SKA-Low:  
50-350 MHz**

LOFAR-NL Continuum Survey (30%,  $2\pi$ sr, 10kh)



LOFAR-NL Line Survey (10 km/s,  $2\pi$ sr, 10kh)



**LOFAR-NL:  
120-240 MHz**